

Apr 14, 1980

Mr. Tom Reeder
Williams Brothers Engineering Company
Resource Sciences Center
6600 South Yale Avenue
Tulsa, Oklahoma 74136

Dear Mr. Reeder:

Your letter of January 7, 1980, points out that both sections 192.241(c) and 195.228(b) state that the acceptability of a weld that is nondestructively tested or visually inspected is determined according to standards of section 6 of the 1973 edition of API Standards 1104.

In your letter, you then presented a description of a specific type of weld defect and ask for an interpretation concerning the applicability of section 6 of API 1104 (73) in evaluating the acceptability of that weld. The MTB Interpretation of section 6 of API 1104 concerning this type of weld defect is enclosed.

Sincerely,

/signed/

Cesar DeLeon
Associate Director for
Pipeline Safety Regulation
Materials Transportation Bureau

No. 80-8
Date: Apr 14, 1980

DEPARTMENT OF TRANSPORTATION
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION
MATERIALS TRANSPORTATION BUREAU

PIPELINE SAFETY REGULATORY INTERPRETATION

NOTE: A pipeline safety regulatory interpretation applies a particular rule to a particular set of facts and circumstances, and, as such, may be relied upon only by those persons to whom the interpretation is specifically addressed.

SECTION: 192.241(c) and 195.228(b)

SUBJECT: Nondestructive testing of welds per Section 6 of API-1104 (73)

FACTS: A weld is made utilizing the submerged arc weld process. The first or "root bead" as defined by Section 1 of the 1973 Edition of API Standard 1104 is applied from the outside of the two sections of pipe being jointed. Subsequently, a second bead is applied to the joint completing the outside of the weld. During the application of the first weld bead, flux covers the molten metal from outside the joint until solidification occurs. No attempt is made to control the atmosphere or provide shielding of the arc on the inside of the joint, resulting in porosity formation. In most welds, the intense heat of the third bead (internal) effectively removes entrapped voids and impurities. However, in some cases elliptical porosity voids become entrapped. The radiographic image of these voids generally measures from .110 to .170 of an inch in length and from .045 to .080 of an inch in width. The described indications are always linear or in a straight line and non-spherical.

QUESTION: Does Section 6.64 (hollow bead) of API Standard 1104 apply to the described discontinuities, and if so, at what point in regard to length versus width should the described discontinuity to be considered under Section 6.61 (spherical porosity)?

INTERPRETATION: After discussing this problem with members of the API 1104 Committee and with you by telephone on March 13, 1980, the MTB believes that the discontinuities described would be considered as "isolated slag inclusions" that would be covered by Section 6.52 of API 1104. Hollow bead, as covered by Section 6.64, is not

believed likely to occur in what, in effect, is an inside cover pass. Also, since the discontinuities do not appear to be gas pockets, your question concerning the dimensions of spherical porosity is not applicable to the situation you describe.

Cesar DeLeon
Associate Director for
Pipeline Safety Regulation
Materials Transportation Bureau